Santa Susana Field Laboratory
Monthly Status Report
February 2018

This monthly update is to inform the community about Santa Susana Field Laboratory (SSFL) investigation and cleanup activities that occurred in February 2018 as well as those that are planned for coming months under the California Department of Toxic Substances Control's (DTSC) oversight. A project overview for The Boeing Company (Boeing), United States Department of Energy (DOE) and National Aeronautics and Space Administration (NASA) SSFL areas is included at the end of this report. Documents referenced in this monthly status report that have been reviewed and commented on by DTSC are hyperlinked for easy access. Documents that are currently under DTSC's review will be made available once DTSC's review comments have been issued.

1 SSFL Activities Completed During FEBRUARY 2018

DTSC

California Environmental Quality Act (CEQA)

DTSC's draft Program Environmental Impact Report (draft PEIR) for the SSFL project was issued for public review on September 7, 2017. The 90-day public comment period ended on December 14, 2017. DTSC is currently compiling and reviewing comments that were submitted during the comment period as well as verbal comments received at public hearings. The responses to comments will be included in the final PEIR.

Program Management Plan

DTSC's draft Program Management Plan (draft PMP) for the SSFL project was issued for public review with the draft PEIR on September 7, 2017. The 90-day public comment period ended on December 14, 2017.

Site Wide Air Monitoring Plan

Air monitoring will be conducted to evaluate baseline concentrations of airborne dust, volatile organic compounds, and radionuclides at SSFL prior to commencing cleanup activities. This data will be used to evaluate what, if any, impacts to air quality are caused by cleanup activities. In a letter dated November 14, 2017, DTSC approved the *Final Baseline Air Monitoring Work Plan.* for the activity. In a Technical Memorandum dated November 15, 2017 Boeing Proposed New Air Monitoring Locations for three of their air monitoring locations. Additionally, NASA revised the location of several of their air monitoring stations. DTSC reviewed and approved the locations in a letter submitted to the RPs dated January 30, 2018.

In DTSC's approval letter for the Final Baseline Air Monitoring Work Plan, DTSC indicated an expectation for the start of monitoring by February 10, 2018. On November 27, 2017 NASA submitted a letter on behalf of NASA, Boeing, and DOE indicating additional time was necessary for installation of the stations. The letter requested an extension to April 15, 2018 for the start of air monitoring. As of February 2018, the RPs continue to construct the air monitoring stations and test the air monitoring equipment.

NASA

SOILS:

NASA submitted a revised *Soil Data Summary Report* to DTSC on February 22, 2017. This document is a revision to an earlier draft document (dated May 2015) reviewed and commented on by DTSC in March 2016. The report summarizes the results of soil samples collected to define the extent of chemical contamination at NASA-administered sites at SSFL. DTSC is reviewing the document.

GROUNDWATER:

On February 21, 2018, NASA submitted a NASA-Specific Sitewide Groundwater Quality Sampling and Analysis Plan. This document in an update of a previous 2010 document, and reflects information gathered during NASA's 2011-2016 investigation of the NASA SSFL Areas of Impacted Groundwater (AIGs). DTSC is reviewing the document.

On May 9, NASA submitted a draft RCRA Facility Investigation (RFI) report summarizing the results of NASA's 2013-2016 groundwater source investigations conducted at four sites (the Former Liquid Oxygen (LOX) Plant Area, the Expended Launch Vehicle (ELV)-Building 204 Area, and the former Alfa-Bravo and Coca-Delta Test Stand Areas). DTSC is reviewing the report.

On July 5, 2017, NASA submitted the Human Health and Ecological Risk Assessments for NASA Areas of Impacted Groundwater (AIGs), dated June 22, 2017. This document is a section of the May 2017 NASA Groundwater RI report referenced above. DTSC is reviewing the document.

On September 11, 2017, NASA submitted a Work Plan addendum to further explain their approach for conducting Corrective Measures Studies on groundwater and vadose zone bedrock. DTSC is reviewing the document.

DEMOLITION:

Removal of inactive infrastructure and support equipment outside the former NASA engine test stands continued at the former Delta, Bravo and Alfa areas. Removal of ancillary infrastructure and support buildings at the Coca area should commence during 2018. NASA demolition activities at SSFL are conducted under Ventura County authority.

PERMITTING:

In June 2016, NASA submitted a draft post-closure permit renewal application for the Area II Surface Impoundments. DTSC is currently reviewing the Area II Surface Impoundment post-closure permit application for technical completeness. The effect of recent legislative changes to post-closure permit requirements under California Code of Regulations Title 22, Article 6 are also being evaluated as part of the review.

The post-closure requirements for the Area II Surface Impoundments are regulated by DTSC under RCRA laws and regulations because these impoundments are former hazardous waste facilities. The required cleanup levels for the impacted soil will continue to be dictated by the 2010 Administrative Order on Consent for Remedial Action (AOC).

DOE

SOILS:

On December 29, 2016, DOE submitted a Draft Chemical Data Summary Report. The report summarizes the results of soil samples collected to define the extent of chemical contamination in soil in Area IV and the Northern Buffer Zone at SSFL. This document is currently being reviewed by DTSC, and can be viewed at DOE's Chemical Data Summary Report website.

In 2012, US Environmental Protection Agency (US EPA), in coordination with DTSC and DOE, completed sampling efforts to define the nature and extent of Area IV radiologic contamination.

DOE conducted soil treatability studies to evaluate onsite soil treatment technologies that could potentially reduce the volume of contaminated soil to be excavated and transported from Area IV. The treatability studies addressed soil partitioning, mercury valence state in soil, bioremediation, phytoremediation, and natural attenuation, as well as residual fuel hydrocarbon characterization methods. The soil treatability studies study plans, evaluation reports and Summary Report have been uploaded to the DTSC-SSFL DOE Soil Treatability Studies web page.

GROUNDWATER:

DOE has completed its field investigation of groundwater contamination at DOE sites at SSFL. The findings from the RFI groundwater investigation are presented in "Preliminary Draft RCRA Facility Groundwater Investigation Report (GW RFI) Area IV, Santa Susana Field Laboratory, Ventura County, California", dated June 16, 2017. The draft document is currently in review by DTSC. On January 31, 2018, DTSC met with DOE to discuss preliminary comments based on DTSC's review. DTSC anticipates submitting written comments to DOE in February 2018.

On February 22, 2018 DOE, submitted a Work Plan addendum to further explain their approach for conducting Corrective Measures Studies on groundwater and vadose zone bedrock. DTSC is reviewing the document.

DOE submitted a "Draft White Paper on Thermal Remediation Technologies for Treatment of Chlorinated Solvents". This document was submitted because in-situ thermal remediation has been identified as a potentially applicable remedy to address mass removal of chlorinated solvents and other contaminants of concern in groundwater. In a letter dated February 7, 2018, DTSC requested resubmittal of the Draft White Paper to include radio frequency heating as one of the technologies to be evaluated. DOE is to submit the revised White Paper to DTSC as a final document for review and approval.
DOE completed field sampling activities to collect data to support implementation of a Groundwater Interim Measure (GWIM) at the Area IV Former Sodium Disposal Facility (FSDF). Data was collected to better understand the hydraulic properties and distribution of the residual mass of volatile organic compounds (VOCs) in the upper bedrock that underlies the FSDF. DOE evaluated the data collected, and on January 31, 2018, met with DTSC to discuss the GWIM investigation findings, as well as have an overall discussion regarding path forward for completion of the Preliminary GW RFI Report and conceptual framework and outline for DOE's Area IV Groundwater Corrective Measures Study Report. DOE proposed that during dewatering of the FSDF under the GWIM, the relatively small volume of extracted groundwater (around 5 gallons per day) would ultimately be hauled off site for disposal, rather than undergo on-site treatment and subsequent injection into the subsurface, as was originally proposed. DTSC requested that DOE submit a written request that describes the proposed actions. In an email dated

February 7, 2018, DOE provided a written request indicating that DOE is changing its original proposed approach.

BOEING

Boeing is finishing soils investigation work in Area I, Area III, and the southern buffer zone. Boeing's surficial media characterization work is divided into units identified as Boeing RFI Subareas:

- 1A North, 1A Central, 1A South
- 1B North, 1B Southwest, 1B Southeast
- 5/9 North, 5/9 South, and
- Group 10

SURFICIAL MEDIA INVESTIGATION:

Boeing is using the Data Quality Objectives (DQOs) process and standard operating procedures for planning and conducting sampling work to complete the characterization of surficial media. The purpose of the current phase of surficial media investigation work is to collect sufficient data to fill data gaps that were identified in the 2007 and 2008 Group RFI Reports. All Boeing sites are in the data evaluation and reporting work phases.

- ***Subarea 5/9 South*** - Systems Testing Lab (STL-IV), Compound A, Sewage Treatment Plant (STP)-3, and Environmental Effects Laboratory (EEL), and areas not associated with RFI sites in Subarea 5/9 South
  - Boeing submitted responses to comments and revised RFI Data Summary Reports for Subarea 5/9 South on April 27, 2017.
  - DTSC is reviewing the Report.
- ***Subarea 1A Central*** - Building 359, Advanced Propulsion Test Facility (APTF), and Happy Valley North and areas not associated with RFI sites in Subarea 1A Central
  - Boeing submitted responses to comments and revised RFI Data Summary Reports for Subarea 1A Central on May 24, 2017.
  - DTSC is reviewing the Report.
- ***Subarea 10*** (Southern Buffer Zone)
  - Boeing submitted the RFI Data Summary Report for Subarea 10 on June 19, 2017.
  - DTSC is reviewing the report.
- ***Subarea 5/9 North*** - Silvernale, Engineering Chemistry Laboratory (ECL), and areas not associated with RFI sites in Subarea 5/9 North
  - Boeing submitted the RFI Data Summary Report for 5/9 North on July 26, 2017.
  - DTSC is reviewing the report.
- ***Subarea 1A South*** - Canyon, Happy Valley South, Laser Engineering Testing Facility (LETF)/CTL-I, and areas not associated with RFI sites in Subarea 1A South
  - Boeing submitted the RFI Data Summary Report for 1A South on August 22, 2017.
  - DTSC is reviewing the report.
- ***Subarea 1B Southeast*** – Chemical Test Lab (CTL)-III, Perimeter Pond, and areas not associated with RFI sites in Subarea 1B Southeast.
  - Boeing submitted the RFI Data Summary Report for 1B Southeast on September 29, 2017.
  - DTSC is reviewing the report.
- ***Subarea 1B North*** - Bowl, R-1 Pond, and areas not associated with RFI sites in Subarea 1B North

- Boeing submitted the RFI Data Summary Report for 1B North on November 19, 2017.
- DTSC is reviewing the report.

- ***Subarea 1A North*** - B-1, Instrument & Equipment Laboratory (IEL), Area 1 Landfill, and areas not associated with RFI sites in Subarea 1A North
  - Boeing submitted the RFI Data Summary Report for 1A North on December 18, 2017.
  - DTSC is reviewing the report.
  - Former Shooting Range
    - The Former Shooting Range is not part of Subarea 1A North but the site information is included here as the Former Shooting Range is located on the Mountains Recreation Conservancy Authority, Sage Ranch property which is adjacent to Subarea 1A North and some soil data overlap between the Former Shooting Range area and Subarea 1A North.
    - The work is being conducted under an approved work plan and addendum.
    - Field work to investigate soils to define the extent of lead shot and clay pigeons as well as characterize the soil for lead, arsenic, antimony, and polynuclear aromatic hydrocarbon concentrations began in late September 2016 and was completed on January 18, 2017.
    - Laboratory analysis for soil sampling is complete.
    - Boeing constructed a fence to prevent access to a 1,200-foot section of the Sage Ranch Loop Trail where sampling results indicate remediation is necessary to address lead concentrations in soil.
    - Boeing released a statement to community members regarding the status of the sampling results, the need for remediation, and the closure and re-routing of a portion of the trail.
    - The Draft Former Rocketdyne-Atomics International Rifle and Pistol Club Shooting Range Investigation Area Data Summary Report and Findings Report was submitted to DTSC on April 11, 2017. DTSC provided comments on the report to Boeing on May 5, 2017. DTSC received responses to DTSC comments on July 11, 2017. DTSC sent a letter dated November 15, 2017 requiring Boeing to conduct further characterization and evaluation of the impacted media that may have entered the Northern Drainage from the Former Shooting Range. DTSC received the Work Plan Addendum for additional field work on February 28, 2018. DTSC is reviewing the Work Plan Addendum.
    - On September 12, 2017 DTSC and the Los Angeles Regional Water Quality Control Board conducted a site inspection of recently installed storm water best management practices (BMPs) used to control storm water runoff from the Former Shooting Range into the Northern Drainage. Based on the site inspection DTSC and the LARWQCB expect the BMPs to be evaluated by the Expert Panel and upgraded if appropriate.

- ***Subarea 1B Southwest*** **-** Area I Burn Pit, CTL-V, and areas not associated with RFI sites in Subarea 1B Southwest
  - Boeing submitted the RFI Data Summary Report for 1B Southwest in late December. It was received by DTSC on January 2, 2018.
  - DTSC is reviewing the report.
- **Risk Assessment**
  - Risk Assessments were included in the two draft RFI Data Summary and Findings Reports submitted to date (Subareas 5/9 South and 1A Central).
  - Based on DTSC review comments and changes in risk assessment input parameters by the USEPA, the risk assessment process will need to undergo some changes.
    - Boeing submitted a draft risk assessment work plan on May 18, 2017.

- DTSC is reviewing the draft work plan and issued comments on the document on January 16, 2018.

GROUNDWATER:

- Faults
  - DTSC is currently reviewing a draft technical memorandum evaluating faults (main document and appendices) and an update.
- Groundwater Flow Model
  - Boeing continues to work to update the 3D Groundwater Flow Model.
- Boeing groundwater characterization work in Area IV
  - Seven wells were installed by Boeing in Area IV; evaluation of the hydrologic data is ongoing.
- On June 8, 2017 Boeing submitted a draft Remedial Investigation (RI) report summarizing the results of groundwater characterization work for Area I, Area III and the Southern Buffer Zone. DTSC is reviewing the document.
- On August 24, 2017 Boeing submitted a Work Plan addendum to further explain their approach for conducting Corrective Measures Studies on groundwater and vadose zone bedrock. DTSC is reviewing the document.

BUILDING DEMOLITION:

The Superior Court of California, County of Sacramento, continues to evaluate the ongoing litigation over the demolition of Boeing buildings in SSFL Area IV. Per the December 11, 2013, temporary injunction, DTSC will not issue correspondence regarding the matter until the court issues a decision. A court hearing on the matter is tentatively scheduled for mid-2018.

PERMITTING:

In October 2015, Boeing submitted a draft post-closure permit renewal application for the Areas I and III Surface Impoundments and a separate Closure Plan for the Thermal Treatment Facility. DTSC is currently reviewing the Areas I and III Surface Impoundment post-closure permit application for technical adequacy. DTSC has temporarily suspended review of the Closure Plan for the Thermal Treatment Facility pending ongoing discussion of risk assessment requirements.

The post-closure requirements for the Area I and III Surface Impoundments and closure requirements for the Thermal Treatment Facility are regulated by DTSC under RCRA laws and regulations because both are former hazardous waste facilities. The required cleanup levels for the impacted soil and groundwater will continue to be dictated by the 2007 Consent Order.

SITEWIDE GROUNDWATER CHARACTERIZATION AND CLEANUP

The SSFL groundwater characterization and cleanup program is being conducted by the three responsible parties; Boeing, DOE and NASA. The groundwater characterization and cleanup program consists of:

- Investigation and characterization of groundwater contamination;
- Groundwater monitoring;
- Groundwater interim measures; and
- Treatment of contaminated groundwater with permitted discharge from the Groundwater Extraction and Treatment System.

GROUNDWATER REMEDIAL INVESTIGATION (GWRI)

Data gaps were identified in the 2009 GWRI Report by the RPs. DTSC also identified additional data gaps that were presented in the GWRI comments. The data gap work has been divided into six categories:

- Data gaps identified in the Remedial Investigation (RI) Report;
- Source Zone Characterization;
- Characterization of seeps and springs;
- Characterization of faults;
- Groundwater flow model; and Contaminant transport modeling.

STATUS OF GWRI DATA GAP WORK

Boeing, DOE and NASA have submitted Draft RFI Reports report summarizing the results groundwater investigations conducted at their respective sites. DTSC is reviewing the documents. Additionally, Boeing, DOE and NASA are working on a single, overarching site summary document for groundwater characterization at the SSFL site.

Groundwater modeling efforts are proceeding:

- Groundwater flow model
  - The conditionally approved, groundwater flow model work plan presents an approach for a mountain scale groundwater flow model.
    - Work from the fault studies and data from monitoring wells installed since 2009 will be used to supplement the groundwater flow model. DTSC, Boeing, DOE and NASA are considering applying the revised model at the remedy design stage of the project.
- Contaminant transport modeling
  - Boeing, DOE and NASA continue to develop the approach for contaminant transport modeling.

SITEWIDE GROUNDWATER TREATABILITY STUDIES

Treatability studies are being conducted on several technologies to be evaluated in the feasibility study. The treatability studies address both soil/bedrock and groundwater contamination. Treatability studies can be either field studies or laboratory studies.

- Four groundwater laboratory studies are being conducted:
  - Chemical oxidation using potassium permanganate;
  - Thermal heating of rock core;
    - DOE submitted a revised white paper study of thermal heating of fractured bedrock to DTSC in September 2017. DTSC reviewed the document and submitted comments on February 7, 2018.
  - Microbial characterization and Bio-Stimulation of rock core, pore water;
    - Boeing submitted the report called *Laboratory Evaluation of Biostimulation to Treat Chlorinated Ethenes in the Chatsworth Formation* and submitted it to DTSC on July 10, 2017.
    - DTSC is reviewing the report.
- Two field studies are being conducted:
  - In-situ chemical oxidation (ISCO) using potassium permanganate;
    - Boeing developed a summary report for ISCO and submitted it to DTSC on June 14, 2016.

- DTSC issued comments to Boeing on June 16, 2017. Boeing provided responses to DTSC comments on August 28, 2017. DTSC reviewed the responses and provided comments on both the responses and the report on February 7, 2018.

- Bedrock vapor extraction (BVE);
  - Conducted at NASA's former Bravo test area in late 2014.
  - NASA has submitted the Technical Memorandum: *Results from Bravo Bedrock Vapor Extraction Treatability Study* dated November 2015 to DTSC.
  - DTSC has reviewed and commented on the report.

GROUNDWATER MONITORING

Groundwater monitoring reports are submitted quarterly, with the fourth submittal being an annual report. DTSC reviews the quarterly reports for completeness and compliance but may not issue written comments on the specific quarterly report if significant issues are not present. If compliance issues arise during review of the quarterly groundwater monitoring reports, DTSC directs the Responsible Parties to take action to comply, and follows up to ensure compliance is achieved and maintained.

The annual reports present the results of the previous year's monitoring and undergo a more thorough review. Annual Reports for DOE, NASA and Boeing groundwater monitoring activities were submitted to DTSC on April 25, March 9, and February 27, 2017 respectively. DTSC is reviewing the Reports.

GROUNDWATER INTERIM MEASURES (GWIM)

The GWIM project includes the operation of fourteen groundwater extraction wells. The water will be pumped to the existing Groundwater Extraction Treatment System (GETS) for treatment. GETS effluent is regulated by the Los Angeles Regional Water Quality Control Board (LARWQCB).

- On October 2, 2017, the LARWQCB enrolled Boeing under General Waste Discharge Requirements to regulate injection of GETS effluent to WS-5. Surface discharge of GETS effluent regulated under an NPDES permit can proceed after securing a Streambed Alteration Agreement with the California Department of Fish and Wildlife.
- GWIM and GETS infrastructure is complete, and permits are in place. Operations will begin after baseline groundwater sampling and system commissioning have are complete. GWIM startup is anticipated in April 2018.
- As mentioned above, DTSC and DOE are evaluating a revised approach to GWIM implementation at RS-54A in Area IV.

OPERATION OF WS-9A

WS-9A did not pump in November 2017. WS-9A, located in the southwest corner of Area II, north of the southern buffer zone, is on a pumping program to lower the groundwater elevation near seep SP-890 with a goal of reducing the amount of Trichloroethene (TCE) contamination in groundwater in the immediate area. When operating, groundwater extracted from WS-9A is pumped to the GETS.

- Except for intermittent testing in December 2012 and January 2013, WS-9A has not been pumping since November 2012.
  - The water levels in the seep areas downstream of WS-9A are being monitored. If seepage occurs, it is mechanically collected.
  - Pumping at WS-9A will resume when the GWIM is restarted. The extraction of water at the well will be optimized to perform the intended function at as low a rate as practical.

GROUNDWATER RFI REPORT

Working toward a report format approved by DTSC in January, 2017, Boeing, DOE, and NASA prepared and submitted individual report sections for their specific groundwater characterization activities. The individual report sections were submitted by Boeing on June 2, 2017, DOE on June 15, 2017, and NASA on May 8, 2017. DTSC is reviewing the reports. The individual sections will be part of single sitewide report deliverable.

FEASIBILITY STUDY / CORRECTIVE MEASURES STUDY

DTSC has conditionally approved the Feasibility Study work plan. Cleanup of sitewide groundwater and surficial media in Boeing areas will be regulated under Chapter 6.5 of Division 20 of the Health and Safety Code (California Hazardous Waste Control Law and the Resource Conservation and Recovery Act authorizations). Soils in DOE and NASA areas will be cleaned up under the respective AOCs, and Soils Remedial Action Implementation Plans (SRAIPs) will be prepared to describe their respective cleanup activities. DTSC has received, and is reviewing Boeing's DOE's and NASA's Corrective Measures Studies Work Plan addenda for groundwater and vadose zone bedrock.

PUBLIC OUTREACH

The Office of Public Participation is preparing for the next bi-annual meeting, which will take place on April 10, 2018, and reviewing comments to the Draft Santa Susana Field Laboratory (SSFL) Draft Program Environmental Impact Report (EIR) and Draft Program Management Plan (PMP).

The Public Comment Period for the SSFL Draft Program EIR and Draft PMP began on Thursday, September 7, 2017. Given the complexity of the SSFL cleanup activities and community interest in the project, DTSC extended the public comment period for 45 days. The public comment period was scheduled to close on Thursday, December 7, 2017. However, due to the wildfires in Southern California, DTSC extended the public comment period for one week, until Thursday, December 14, 2017.

Public meetings and hearings for the Draft PEIR and Draft PMP were held in October at two sites. A Public meetings and hearings were held in Chatsworth on October 5, 2017, and in Simi Valley on October 7, 2017.

Hard copies of the SSFL Draft PEIR, Draft PMP (Appendix A), and the Appendices are available for review at the four (4) Information Repositories listed below.

INFORMATION REPOSITIORIES

California State University, Northridge
Oviatt Library
1811 Nordhoff Street 2nd Floor, Room 265
Northridge, CA 91330

Department of Toxic Substances Control
Chatsworth Office
9211 Oakdale Avenue
Chatsworth, CA 91311

Platt Library
23600 Victory Boulevard
Woodland Hills, CA 91367

Simi Valley Library
2969 Tapo Canyon Road
Simi Valley, CA 93063

In February 2018, the Office of Public Participation also responded to the public regarding general project inquiries and uploaded 6 documents regarding the Resource Conservation and Recovery Act (RCRA) Facility Investigations. The following documents were uploaded to the Document Library on DTSC's website:

Documents submitted in February 2018

1. 2018 Q1 Groundwater Level Monitoring Data DOE Area IV at SSFL.
2. Letter from Julie Lincoln/DTSC to the Responsible Parties re: Review of Responses to DTSC Comments and the Revised Draft White Paper on Thermal Remediation Technologies for Treatment of Chlorinated Solvents for SSFL.
3. Letter from Julie Lincoln/DTSC to the Responsible Parties re: Review of Responses to DTSC Comments on the Final Report of Results for the In-situ Chemical Oxidation Field Experiment for SSFL.
4. NASA-Specific Sitewide Groundwater Quality Sampling and Analysis Plan.
5. SSFL Monthly Update - December 2017.
6. SSFL Monthly Update - January 2018.

The RCRA documents listed above are drafts only. They are RCRA Facility Investigations required by the 2007 Consent Order or 2010 Administrative Orders on Consent (AOC). The publication date refers to the completion date by the responsible party and not the submission or receive date by DTSC. Each submission is currently under review by DTSC and includes a notice on the cover page identifying the document(s) as draft.

SSFL ACTIVITIES ANTICIPATED AFTER FEBRUARY 2018

DTSC

DTSC is compiling comments received on the Draft PEIR and Draft PMP, and will generate responses to those comments.

NASA

- DTSC will review NASA's February 2017 revision of the Soil Data Summary Report. It is anticipated that our review will conclude in 2018.
- NASA will continue demolition and removal of ancillary structures and buildings at the Delta, Alfa, and Bravo sites, to be followed by similar removals at the Coca area and other NASA areas. NASA does not plan to demolish any historic test stand structures as part of their current program. NASA demolition activities are conducted under Ventura County authority.
- DTSC will continue to review NASA's May 2017 Remedial Investigation (RI) Report, June 2017 Human Ecological Risk Assessment and February 2018 Sampling and Analysis Plan for groundwater investigations conducted at NASA sites.

DOE

- DTSC will likely complete review of DOE's June 2017 Preliminary Groundwater RFI Report and will issue comments based on the review.
- DTSC will continue to review the draft Chemical Data Summary Report.
- DTSC will conduct final review, upon receipt of DOE's revised Thermal Treatability Study.

- DOE and DTSC will continue groundwater discussions, as well as coordinate on siting of additional groundwater monitoring well(s) to be installed at FSDF in support of the GWIM activities.
- DTSC will continue to coordinate and meet with the federal and state biologists to review site conditions and site data.

BOEING

SURFICIAL MEDIA INVESTIGATION

- Preparation of the RFI summary reports and Risk Assessment is ongoing for all Boeing sites and subareas. RFI summary reports and risk assessments are being submitted separately. Boeing has submitted all nine Data Summary and Findings Reports for Areas I and III. DTSC anticipates continuing to review the RFI DSFRs in January 2018.
- DTSC is reviewing the 5/9 South and 1A Central RFI DSFRs and responses to comments.
- DTSC is reviewing the Subarea 10, 5/9 North, 1A South, 1B Southeast, 1B North, 1A North, and 1B Southwest RFI DSFRs.
- DTSC is reviewing the report on Laboratory Evaluation of Biostimulation to Treat Chlorinated Ethenes in the Chatsworth Formation.

GROUNDWATER

- Faults
  - DTSC is reviewing Boeing's revised, draft fault technical memorandum that includes the work conducted since the submittal of the 2009 RI Groundwater report.
- Boeing groundwater characterization work in Area IV
  - Evaluation of the hydrologic data for source zones is ongoing.
- Groundwater flow model.
  - The groundwater flow model continues to be developed.
- Groundwater Report.

  DTSC is reviewing the Boeing section of the site-wide Groundwater RFI Report submitted in June 2017.

STORMWATER MONITORING AND SAMPLING

- To comply with Los Angeles Regional Water Quality Control Board requirements, Boeing will monitor flow and collect samples as needed during rain events.

FEASIBILITY STUDY / CORRECTIVE MEASURES STUDY (CMS)

- DTSC is reviewing the Boeing CMS Work Plan Addendum for the CFOU.
- DTSC is reviewing the DOE CMS Work Plan Addendum for the CFOU.
- DTSC is reviewing the NASA CMS Work Plan Addendum for the CFOU.

SITEWIDE GROUNDWATER

DTSC is reviewing the individual report sections for Boeing's, DOE's and NASA's specific groundwater characterization activities. The individual sections are intended to be part of single sitewide report deliverable that is under development.

PUBLIC OUTREACH

The following Public Participation activities are anticipated in the next 30 days:

- The DTSC SSFL Monthly Update Report for March will be posted online and added it to the "What's New" page;
- SSFL Document Upload Notification: regarding RCRA Facility Investigations will continue to be provided; and
- Update the Public Participation Plan to include the Draft PEIR and Draft PMP outreach process, next steps, and the outreach strategy moving forward and continue internal review.

GENERAL PROJECT SCHEDULE

The current schedule goal is to finalize the PEIR in 2018 and for all three RPs to have draft cleanup decision documents to DTSC in late 2018 to early 2019. Cleanup activities are currently anticipated to begin in 2019.

The departure from the 2017 schedule presented in the Consent Order and referred to in the AOCs is due to the recognized complexity of the project, including the rugged physical nature of the site, multiple responsible parties, and the need to complete several phases of investigation to define the nature and extent of impacted soils. In addition, as described in Section 4.3 (of the Program Management Plan), during the investigation phases, several cleanup actions were taken.

Project cleanup schedules will be further defined in the remediation planning documents and associated designs, however if soil cleanup begins in early 2019, remediation of all chemically and radiologically impacted soils is anticipated to be completed by the end 2034.

2 PROJECT OVERVIEW

The SSFL is located 30 miles northwest of downtown Los Angeles in southeastern Ventura County, near the crest of the Simi Hills at the western border of the San Fernando Valley. A former rocket engine test and nuclear research facility, the 2,849-acre field laboratory is currently the focus of a comprehensive environmental investigation and cleanup program, conducted by Boeing, DOE and NASA, and overseen by DTSC.

Boeing owns and operates Area I, except for the approximately 41-acre former Liquid Oxygen (LOX) Plant area, and all of Areas III and IV. Areas I and III are operated by Boeing. Boeing also owns the approximately 1,143-acre southern buffer zone and 182-acre NBZ. NASA is responsible for cleanup and administration of Area II and the former LOX Plant, but it is owned by the federal government. Boeing owns and operates Area IV but DOE is responsible for cleanup of soils in Area IV and the NBZ.

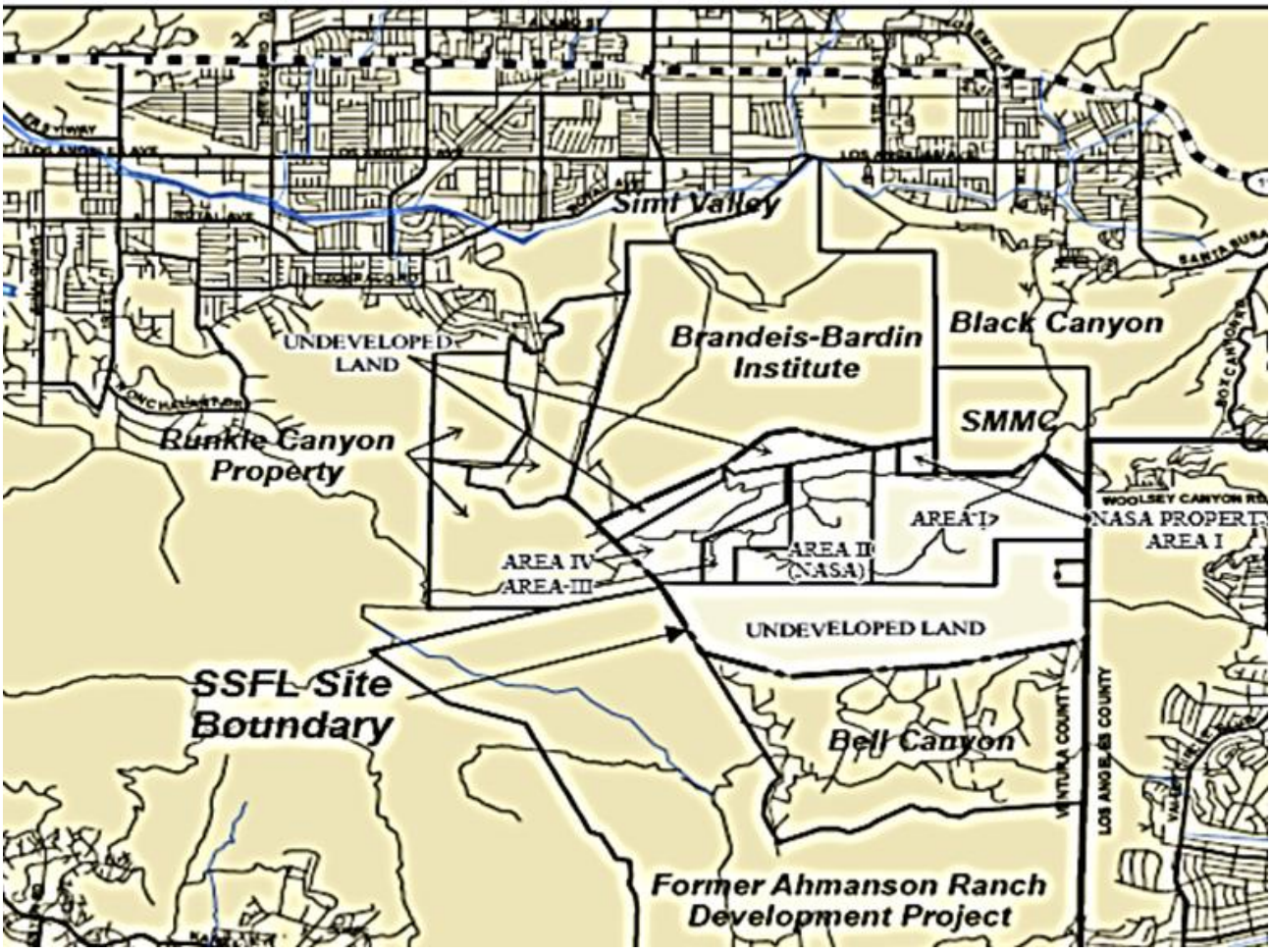

Figure 1 – SSFL and Surrounding Area

DOE

DTSC and DOE participated in chemical soil sampling efforts in Area IV of the SSFL property where former DOE activities occurred on the Site. Area IV is a 290-acre area located in the northwestern section of the site. DOE owns facilities on a 90-acre site within Area IV. Area IV includes the Energy Technology Engineering Center (ETEC) facility where nuclear research, development, and testing began in the 1950's.

The Area IV radiological soil sampling effort, conducted by the US EPA, was completed in 2012. The US EPA approached the investigation by splitting the Area IV and NBZ investigation into historical site assessment (HSA) subareas. The chemical soil sampling efforts followed the same HSA subarea designations. DOE and DTSC participated in Area IV and NBZ co-located soil sampling for chemical contaminants.

DOE completed the chemical soil characterization sampling in 2014. The sampling included three phases, as specified in the December 2010 AOC, signed by DTSC and DOE:

- Phase 1 - co-located sampling for chemical analysis at US EPA's first phase of radiological sampling locations in Area IV and the NBZ.
- Phase 2 - sampling at randomly selected sampling locations, and

- Phase 3 - identify the locations at the Site where insufficient chemical data exists (chemical data gaps) and sample as appropriate.

In 2012, the US EPA, in coordination with DTSC and DOE, completed its second round of sampling efforts to define the nature and extent of radiologic contamination in Area IV.

US EPA's round two sampling locations were based upon the validated sampling results they received from their Round 1 sampling.

Not all of US EPA's Round 2 sample locations were sampled for chemical contaminants in 2012 and chemical data gap investigation locations may have been required where no radiological sampling was needed. In 2013-2014, the rationale and selection of chemical data gap investigation sampling locations for Area IV were provided, discussed with the community, and implemented. The Area IV chemical data gap sampling is now complete. The radionuclide and chemical results from these investigations are being used for remediation planning. A Draft Chemical Data Summary Report was submitted to DTSC on December 29, 2016. DOE Draft Environmental Impact Statement was issued to the public on January 6, 2017.

DOE has completed investigations of groundwater source areas at DOE sites in Area IV, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning. DOE's findings will be presented in a site-wide RCRA Facility Investigation Report, which is anticipated to be submitted in 2018.

NASA

NASA has concluded chemical data gap investigations of soil and surficial media characterization at the 41.7-acre NASA administered portion of Area I (the former LOX Plant), and 404-acre Area II. NASA Area II was used primarily for rocket engine testing and includes the Alfa, Bravo, Coca, former Delta Test Stands and support structures. Under the terms of the December 2010 AOC, NASA implemented six Field Sampling Plans (FSPs) to complete the AOC soil investigations.

The five NASA surficial media FSPs include:

- FSP-1 - Alfa-Bravo Fuel Farm, Coca-Delta Fuel Farm, Propellant Load Facility
- FSP-2 - Incinerator/Ash Pile/STP, Building 204, Storable Propellant Area (SPA), and Skyline Road
- FSP-3 - Alfa Test Stand, Bravo Test Stand
- FSP-4 - LOX Plant, Area II Landfill, ELV
- FSP-5 - Coca Test Stand, former Delta Stand, R2 Ponds

The sampling proposed in the FSPs is complete, and DTSC is reviewing NASA's draft Data Summary Report for soils characterization work in the NASA areas of the site.

NASA is conducting extensive investigations of five major groundwater source areas at Area I LOX Plant and Area II, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning.

BOEING

Boeing owns most of Area I and all of Areas III and IV. Areas I and Ill total 792 acres and are operated by Boeing. Boeing also owns the 1,143-acre southern buffer zone and 182-acre NBZ. Soils in Area IV and the NBZ are being characterized in the DOE portion of the project.

Boeing sites are in Reporting Groups 1A, 1B, 5, 9 and 10. Boeing has reorganized the sites in subgroups identified as Boeing RFI Groups:

- 1A North, 1A Central, 1A South
- 1B North, 1B Southwest, 1B Southeast
- 5/9 North, 5/9 South, and
- Group 10

The proposed sampling is substantially complete, and Boeing has begun submitting data summary reports for DTSC review.

Boeing is conducting investigations of groundwater source areas at Boeing sites in Area I and Area III, with the goal of characterizing the nature and extent of contaminant releases at these areas for groundwater remedial planning.

Additional Information can be found on DTSC's website at:
www.dtsc.ca.gov/SiteCleanup/Santa_Susana_Field_Lab